Model SCM268 User Guide

Four-channel Microphone Mixer

©2003 Shure Incorporated
27D8646 (Rev. 4)

Printed in U.S.A.

! IMPORTANT SAFETY INSTRUCTIONS !

1. READ these instructions.
2. KEEP these instructions.
3. HEED all warnings.
4. FOLLOW all instructions.
5. DO NOT use this apparatus near water.
6. CLEAN ONLY with dry cloth.
7. DO NOT block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. DO NOT install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. DO NOT defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wider blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. PROTECT the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. ONLY USE attachments/accessories specified by the manufacturer.
12. USE only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. UNPLUG this apparatus during lightning storms or when unused for long periods of time.
14. REFER all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. DO NOT expose the apparatus to dripping and splashing. DO NOT put objects filled with liquids, such as vases, on the apparatus.

DESCRIPTION

The Shure Model SCM268 is a transformer-balanced, four-channel microphone mixer. Its simple, compact design delivers superior performance and exceptional sound quality with low noise and a flat frequency response.

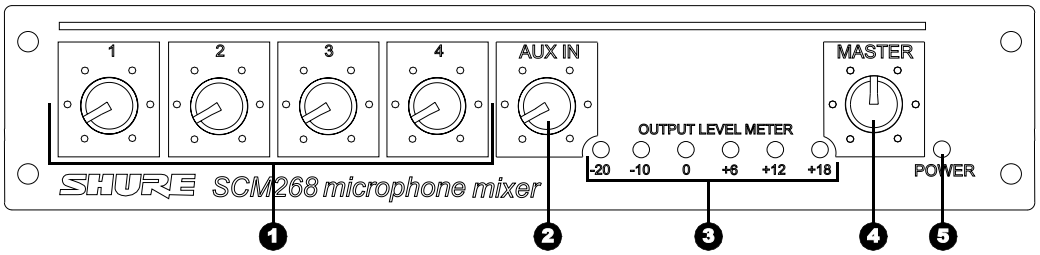
Versatile in all types of applications, the SCM268 integrates transformer-balanced XLR inputs, a switchable microphone/line level transformer-balanced XLR output, phono jack inputs and output, phantom power, and an auxiliary input channel. It can function as a primary or add-on mixer for sound reinforcement, recording, broadcast, or audio-visual presentation systems.

With the supplied hardware, the mixer's half-rack chassis mounts securely in single or dual rackmount installations. For fixed installations, the SCM268 can be fastened on or below a shelf, counter, or tabletop.

FEATURES

- Four transformer-balanced microphone inputs
- Transformer-balanced output-switchable mic/line level
- Five -10 dB line-level inputs
- Six-segment LED output level meter
- Built-in 12-volt phantom power
- Internal power transformer
- Built-in low-cut filter on microphone inputs (below 80 Hz)

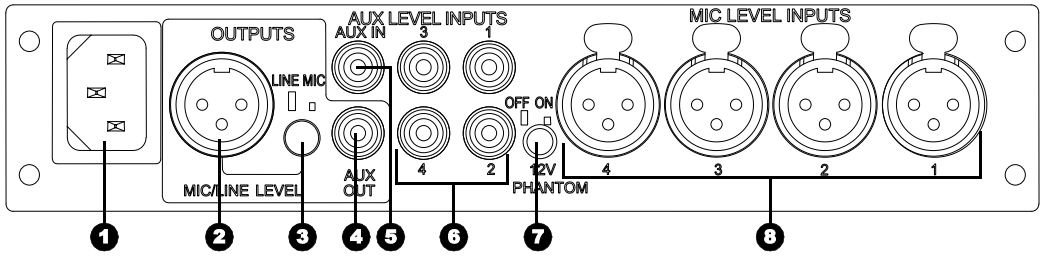
FRONT PANEL



1. **Gain Controls (1-4).** Adjusts gain for microphone level inputs and auxiliary level inputs 1-4.
2. **Auxiliary Channel Gain Control (AUX IN).** Adjusts the auxiliary channel input gain.
3. **Output Meter.** LED meter indicates peak output signal level.
4. **Master Gain Control (MASTER).** Adjusts overall output level.
5. **Power Indicator (POWER).** This LED illuminates when the unit is plugged in and receiving power.

NOTE: The SCM268 does not have a power switch. To turn the unit off, unplug the power cord or use an external power strip with a switch. However, it can remain plugged in as it uses very little power when idle.

REAR PANEL



1. **Power Connector.** Accepts 100-120 Vac (SCM268) or 220-240 Vac (SCM268E).
2. **Output Connector (MIC/LINE OUT).** Transformer-balanced XLR output connector. Switchable between line and microphone level.
3. **Output Level Switch (MIC/LINE OUT).** Recessed switch changes the signal level of the XLR output connector:
   In = Microphone Level
   Out = Line Level
4. **Auxiliary Output Connector (AUX OUT)**. Phono jack feeds consumer-level audio equipment. Not affected by MIC/LINE switch.
5. **Auxiliary Level Inputs (AUX LEVEL INPUTS, 1-4).** Phono jacks connect to consumer-level audio sources.
6. **Auxiliary Input Channel (AUX IN).** A dedicated auxiliary-level input for the auxiliary channel.
7. **Phantom Power Switch (12V PHANTOM).** Recessed switch turns on phantom power for microphone inputs 1-4.
8. **Microphone Level Inputs (MIC LEVEL INPUTS).** Transformer-balanced, microphone-level XLR inputs.

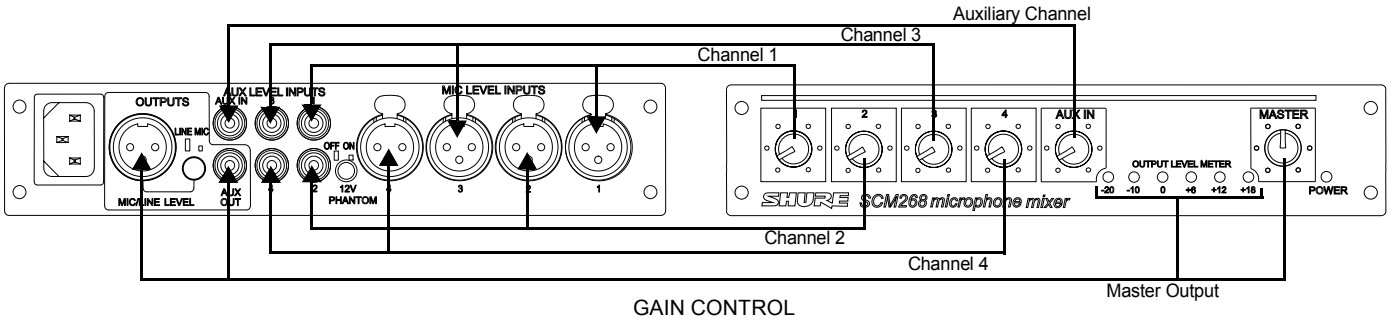
GAIN CONTROL

INPUT GAIN

The gain control knobs 1-4, located on the front panel, adjust the gain for both microphone and auxiliary-level inputs of channels 1-4 (see Figure 1). For example, the channel 1 gain control is used for both the channel 1 microphone input (MIC LEVEL INPUT 1) **and** the channel 1 auxiliary level input (AUX LEVEL INPUT 1). The auxiliary gain control knob (AUX IN) affects only the auxiliary input (AUX IN).

OUTPUT GAIN

The master output gain control knob (MASTER) adjusts gain to both the XLR balanced output (MIC/LINE LEVEL) and the auxiliary level output (AUX LEVEL).

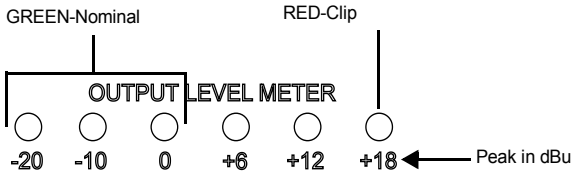


GAIN CONTROL
FIGURE 1

OUTPUT LEVEL METER

The six LEDs on the front panel labeled OUTPUT LEVEL METER illuminate to reflect the peak level of the mixed output signal from the SCM268 (in reference to balanced line output) in dBu (0 dBu = 0.775 V).

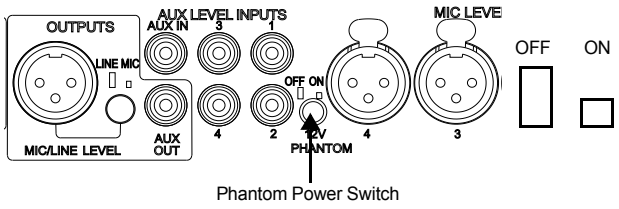
Use the master gain control (MASTER) to adjust peak levels, as indicated by the LEDs. The red LED illuminates when the output is 2 dB below clipping.



PHANTOM POWER

When the phantom power switch on the back panel is on (12V PHANTOM-ON), the SCM268 provides 12 V of phantom power to each XLR microphone input. The switch is recessed to prevent accidental engagement. Most *condenser* microphones require phantom power. Use it when connecting these types of microphones to the SCM268.

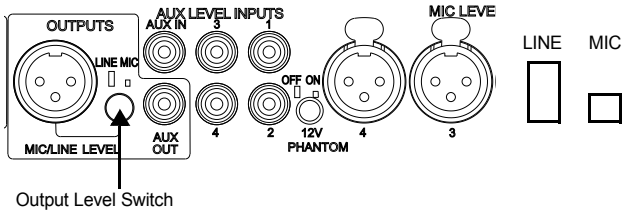
NOTE: Phantom power does not affect the operation of balanced dynamic microphones. With phantom power on, they can be connected to the SCM268 in combination with condenser microphones that do use it.



OUTPUT LEVEL SWITCH

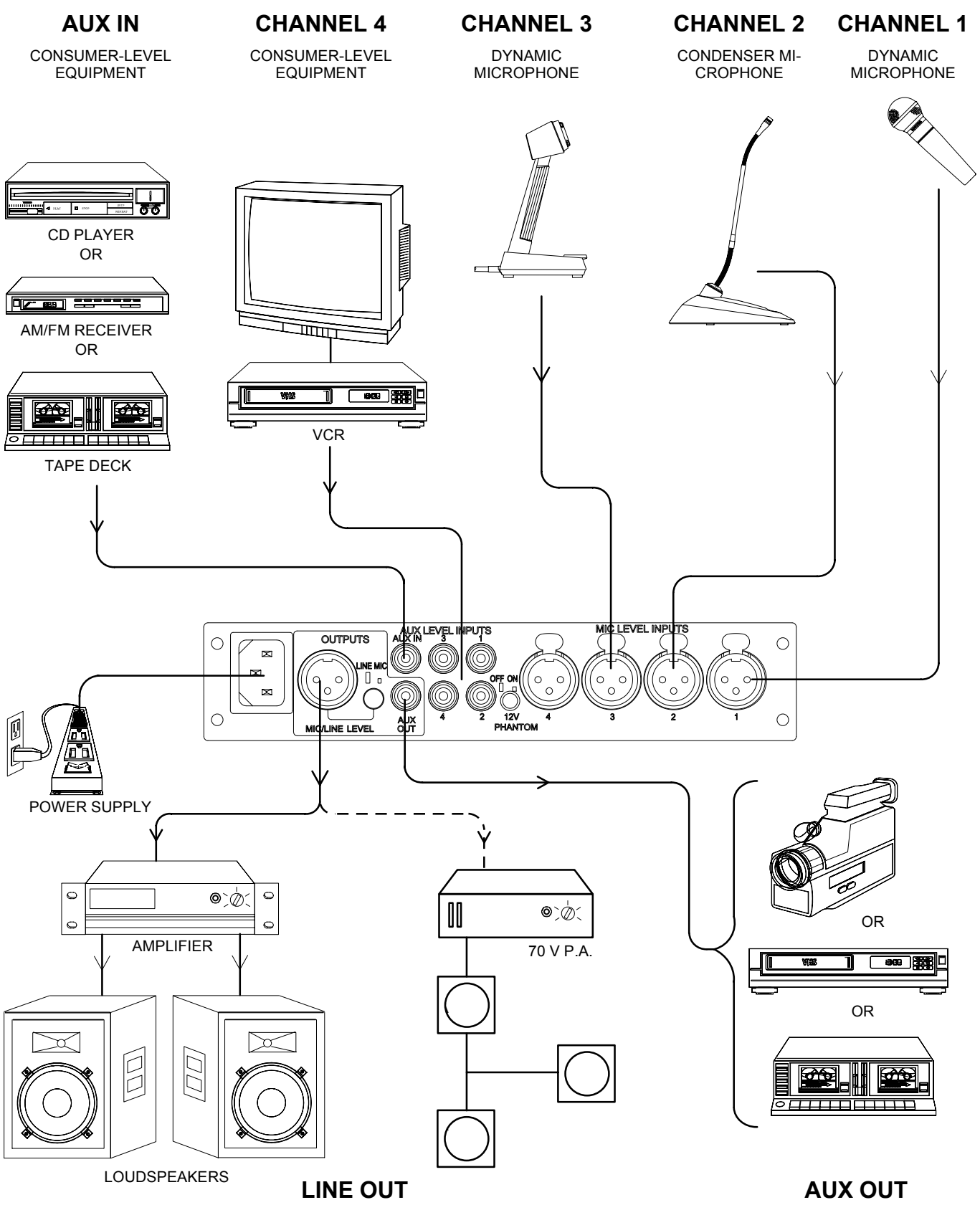
The output level switch on the back panel (MIC/LINE OUT) sets the level of the balanced XLR output. When set to MIC, it reduces the output by about 50 dB. Set the switch so that the output level matches the input level of the device to which you are connecting the SCM268. The switch is recessed to prevent accidental engagement.

NOTE: The output level switch does not affect the auxiliary output (AUX OUT) level.



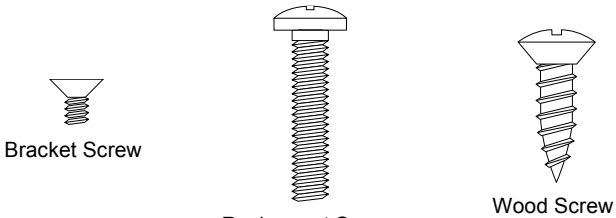
CONNECTIONS

The following diagram illustrates a few of the many types of connections possible with the SCM268. Note that nothing is connected to the channel 4 microphone input (MIC LEVEL INPUT 4). This is because channel 4 is being used for the consumer-level equipment connected to the channel 4 auxiliary level input (AUX LEVEL INPUT 4). Connecting both auxiliary level and microphone level inputs to a single channel is not recommended because the SCM268 would not be able to independently mix the two sources.



SUPPLIED HARDWARE

- **4 rubber feet.** For stand-alone installation.
- **1 rackmount bracket, long.** For half-rack (single unit) installations.
- **1 rackmount bracket, short.** For half-rack (single) or dual-mount installations.
- **2 straddle brackets.** For dual-mount or fixed installations.
- **12 bracket screws, 1/4 in. (6 mm).** For securing the brackets to the chassis.
- **4 rackmount screws, 1 in. (2.5 cm).** For mounting the unit in a rack.
- **4 plastic washers.** For use with the supplied rackmount screws.
- **4 wood screws, 1/2 in. (1.25 cm).** For fixed installations.

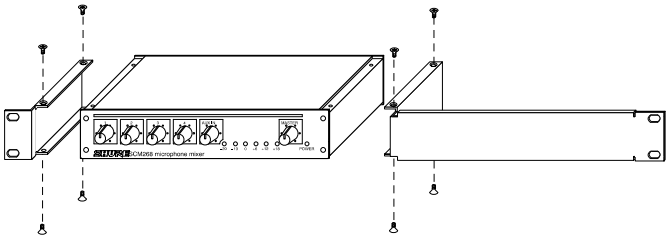


RACKMOUNT INSTALLATION

The SCM268 can be mounted as a single unit or dual-mounted with either another SCM268 or another Shure half-rack unit such as the SCM262 or DFR11EQ. Attach the rackmount brackets using one of the following methods:

Single unit (half-rack) installation:

1. Attach the short and long rackmount brackets to the SCM268 with eight (8) of the supplied bracket screws.

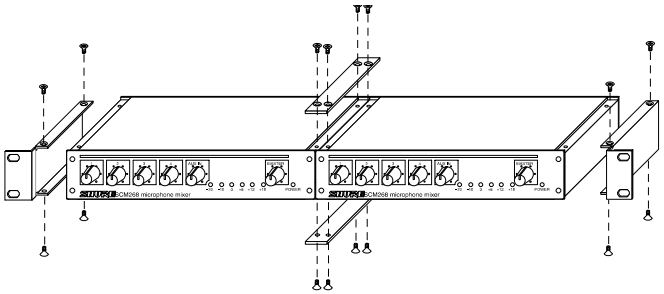


Dual-mounted installation:

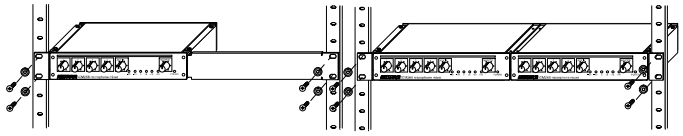
1. Connect the two units together side-by-side using two (2) straddle brackets. The brackets should straddle the recessed edges on on the top and bottom of each chassis. Fasten them using eight (8) bracket screws.

   NOTE: Be sure to use both straddle brackets-one on the top and one on the bottom.

2. Attach the *short* rackmount brackets to the outsides of the combined units with eight (8) of the bracket screws.

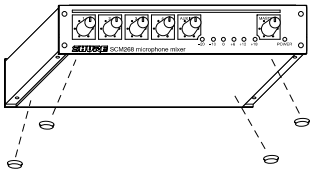


3. After attaching the brackets, mount the unit in an equipment rack using the supplied rackmount screws and plastic washers.



STAND-ALONE INSTALLATION

Adhere the four (4) supplied rubber feet to the bottom of the unit at each corner. This will keep it from sliding and protect the table surface.



FIXED INSTALLATION

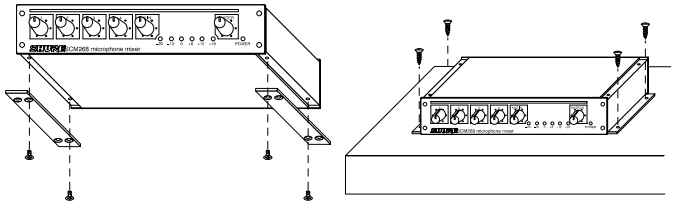
To permanently affix the SCM262 above or below a table, shelf, or counter top, use the following steps:

1. Fasten the straddle brackets to the recessed edges of the chassis using four (4) bracket screws.

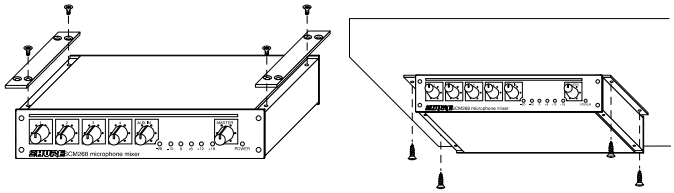
   Top mount: Fasten the straddle brackets to on the bottom of the unit

   Hanging mount: Fasten the straddle brackets to the top of the unit.

2. Fasten the straddle brackets to the surface using the four (4) supplied wood screws.



TOP MOUNT



HANGING MOUNT

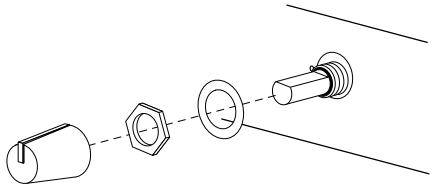
INTERNAL MODIFICATIONS

WARNING! Voltages in this equipment are hazardous to life. No user-serviceable parts inside. Refer all servicing to qualified service personnel.

DISASSEMBLY

To access the printed circuit board (pc board) for internal modifications, use the following steps:

1. Unplug the power cord.
2. Remove the knobs and retainer nuts from the front panel (See Figure 2).



KNOB ASSEMBLY
FIGURE 2

3. Remove the four screws at each corner of the **back panel.**
4. Remove the two screws at each bottom corner of the front panel
5. Slide the back panel and pc board out from the rear of the chassis.

CAUTION: When reassembling the SCM268, DO NOT OVERTIGHTEN the knob retainer nuts. Use a minimal amount of force to secure the nut (0.6-0.8 N·m (5-7 in·lb)). Damage to the internal components will result if too much force is used.

LOW-CUT FILTER

To bypass the built-in low-cut filter for a given channel, remove the specified resistor and place a 10μF to 33μF capacitor in the specified pc board location (polarity does not matter). Refer to the following table:

Channel	Remove Resistor from:	Place 10μF to 33μF Capacitor in:
1	R18	X17
2	R28	X27
3	R38	X37
4	R48	X47

To select a particular corner frequency for the low cut filter, remove the R18, R28, R38, or R48 resistor for a given channel as specified above. Then, in the corresponding pc board location (X17, X27, X37, or X47), place a capacitor of the specified value (polarity does not matter). Refer to the following formula for selecting the correct capacitor value for the desired corner frequency.

$$C = 26.5/F$$

where:

C = value of capacitor in μF
F = corner frequency (-3 bB) for low-cut filter in Hz

The following table lists the low-cut frequency corners for some of the most common capacitor values:

Capacitor Value (μF)	Low-Cut Frequency Corner (Hz)
.033	803
.047	564
.068	390
.1	265
.22	120
.33	80
.47	56
.68	39
1.0	26.5
2.2	12

PHANTOM POWER DISABLE

To disable phantom power for a given microphone input, remove the specified resistor as listed in the following table:

Channel	Remove Resistor:
1	R15
2	R25
3	R35
4	R45

LINE PAD

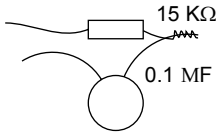
To insert a 50 dB line pad for a given microphone input, remove the specified resistor and short the solder points at the specified pc board locations. Refer to the following table:

Channel	Remove Resistors:	Short Solder Points:
1	R12, R13, R15	X11 and X14
2	R22, R23, R25	X21 and X24
3	R32, R33, R35	X31 and X34
4	R42, R43, R45	X41 and X44

HOT MIC PAD

Some condenser mics have a high output. In order to avoid overdriving the input stage, the user may need to set the input pot lower than desired. To fix this problem, the user can place an 11 dB pad into the input gain stage of a selected channel.

1. Twist together the leads from one side of a 15 kΩ resistor and a 0.1 μF capacitor:



2. Solder the free ends of the resistor-capacitor combination into the holes at the jumper position indicated by the following table and remove the corresponding surface mount resistor.

Channel	Remove Resistor	Insert Resistor-Capacitor Combination at Jumper
1	R18	X17
2	R28	X27
3	R38	X37
4	R48	X47

SPECIFICATIONS

Measurement Conditions (unless otherwise specified): Line voltage 120 Vac, 60 Hz (SCM268) or 230 Vac, 50 Hz (SCM268E); full gain; 1 kHz, one channel activated; source impedances: Mic 150 Ω, Aux Level 150 Ω; terminations: Line 600 Ω, Mic 600 Ω, Aux Out 10 kΩ. 12 V phantom power off.

ENGLISH

Frequency Response (Ref 1 kHz, controls centered)

Microphone Inputs: 150 Hz to 20 Khz ±2 dB (built-in 80 Hz low-cut)

Auxiliary Inputs: 20 Hz to 20 kHz ±2 dB

Low-Cut Filter (Microphone inputs only)

3dB down at 80 Hz, 6 dB/octave

Gain (typical, controls full clockwise)

Input	Output		
	Mic	Line	Aux Out
Low-impedance mic (150 Ω)	38 dB	76 dB	65 dB
Aux Level	3 dB	40 dB	29 dB

Inputs

Input	Impedance		
	Designed for use with	Actual (typical)	Input Clipping Level
Mic	19-600 Ω	1.2 kΩ	–5 dBV
Aux Level	≤2 kΩ	21 kΩ	>28 dBV

Outputs

Output	Impedance		
	Designed for use with	Actual (typical)	Output Clipping Level
Mic	low-Z inputs	0.2 Ω	–21 dBV
Line	>600 Ω	72 Ω	+18 dBV
Aux Out	>2 kΩ	870 Ω	+7 dBV

Total Harmonic Distortion

<0.25% at +4 dBu output level (through 22 Hz—22 kHz filter; Input 1 and Master centered, all other controls full counterclockwise)

Equivalent Input Hum and Noise(150 Ω source; through 22 Hz—22 kHz filter)

124 dBV

Output Hum and Noise (through 22 Hz—22 kHz filter; channel controls full counterclockwise)

Master full counterclockwise: –92 dBV

Master full clockwise: –70 dBV

Common Mode Rejection

>80 dB at 1 kHz

Polarity

All inputs to all outputs are non-inverting

Overload and Shorting Protection

Shorting outputs, even for prolonged periods, causes no damage. Microphone inputs are not damaged by signals up to +10 dBV; Auxiliary inputs by signals up to +36 dBV

Phantom Power

12 Vdc open-circuit through 340Ω series resistance

Operating Voltage

SCM268: 100—120 Vac rated nominal, 50/60 Hz, 60 mA

SCM268E: 220—240 Vac rated nominal, 50/60 Hz, 30 mA

Temperature Range

Operating: –7° to 49° C (20° to 120° F)

Storage: –29° to 74° C (–20° to 165° F)

Overall Dimensions

44 mm H x 218 mm W x 162 mm D

(1.72 x 8.60 x 6.37 inches)

Net Weight

1.20 Kg (2 lbs, 10 oz)

Certifications

SCM268: UL & cUL Listed by Underwriters Laboratories, Inc.

SCM268E: Eligible to bear CE Marking. Conforms to European EMC Directive 89/336/EEC. Meets applicable tests and performance criteria in European Standard EN55103 (1996) parts 1 and 2, for residential (E1) and light industrial (E2) environments.

Replacement Parts

Knob, Master (blue) 95B8752
Knob, Channel Gain (white) 95A8752
Line (Power) Cords:
SCM268: 100-120 Vac (US/Canada) 95A8762
SCM268E: 220-240 Vac (EU) 95A8778
Fuse, SCM268 (5x20 mm, 250V, 80mA, slow-blow) 80A730
Fuse, SCM268E (5x20 mm, 250V, 40mA, slow-blow) 80J258
Hardware Kit 90AF8100
Link Bars (Bracket) 53A8443
Single Mount Bracket 53A8484
Dual Mount Bracket 53B8484

Optional Accessories

Line (Power) Cord, 230-240 Vac (UK) 95A8713

SHURE

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